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Victoria Hayes MD
Maine Medical Center

Robert Bing-You MD, MEd, MBA
Maine Medical Center

Wendy Craig PhD
Maine Medical Center

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INNOVATION HIGHLIGHT

Building a Peer-Reviewer Community of Practice

Victoria Hayes MD,^{1,2} Robert Bing-You MD, MEd, MBA,² Wendy Craig PhD³

¹Department of Family Medicine, Maine Medical Center, Portland, ME, ²Department of Medical Education, Maine Medical Center, Portland, ME, ³Maine Medical Center Research Institute, Scarborough, ME

Introduction:	Scholarly peer review is the cornerstone for maintaining quality and relevance in the medical literature. Few programs that support peer-reviewer training have been described.
Methods:	We developed a 2-pronged approach to support peer-reviewer training at our institution. This approach included a formal online course that offered a certificate of completion and an informal group manuscript peer review (GMPR) meeting held monthly.
Results:	A total of 13 participants completed the online course in the first 2 years (2017-2018). Nineteen enrolled in the third year. The GMPR met regularly over 3 years and reviewed 26 manuscripts. Typical attendance has been 8-10 interprofessional faculty and learners per session.
Discussion:	The online course has gained increasing enrollment over its first 3 years, extending beyond the institution and even internationally. Over half of learners who have completed the course are now engaged as peer reviewers for our institutional journal. The GMPR meetings have had consistent, interprofessional attendance, providing a spectrum of viewpoints and levels of expertise.
Conclusions:	We propose that both an online training course and GMPR meetings are viable options to support and build a scholarly peer-reviewer community of practice.
Keywords:	peer review, peer-reviewer training

Scholarly peer review (PR) is the traditional process of subjecting an author's work to scrutiny by peers with expertise in the same or similar field before acceptance for publication.¹ PR has existed in various forms for centuries.² It remains the cornerstone of the publishing process for medical literature, despite recent concerns regarding a lack of proven effectiveness, overreliance on individual expertise or opinion, absence of transparency, and bias potential.³

One challenge in PR involves the volume of journal submissions. According to a 2018 report by the International Association of Scientific, Technical and Medical Publishers,⁴ the number of active peer-reviewed journals is growing by 5-6% per year, triggering an ever-expanding demand for skilled peer reviewers. Each year, over 3 million

articles are published in more than 33 000 active peer-reviewed journals written in English.⁴ In a 2009 survey, 68% of 4000 published researchers agreed that formal training would improve the quality of PR.⁵ However, only a few of these training opportunities are available.^{6,7} Most offerings are online or in-person modules devoted to the basics of peer reviewing, rather than a formal mechanism for ongoing professional development.⁸ Instead, self-directed learning is often acquired by accessing the extensive literature on conducting PR, using peer-reviewer guides provided by journals, being exposed to PR as an author, mentoring, or simply gaining "on-the-job" experience.^{6,9}

To address the need for PR education, we implemented a 2-pronged approach at our institution that comprised 1) a formal online course on "Best Practices in Peer Review" and 2) an informal group manuscript peer review (GMPR) meeting. We aimed to support the development of an interprofessional PR community of practice,¹⁰

Correspondence: Victoria Hayes MD
Department of Medical Education, Maine Medical Center
335 Brighton Avenue, Portland ME 04102
hayesv@mmc.org

an informal group of individuals united by shared expertise and a passion for a topic or venture. The purpose of a community of practice is to support the development of members' capabilities and to exchange and build knowledge.

METHODS

The "Best Practices in Peer Review" course is a 10-week online curriculum created in the Canvas® learning management system (Salt Lake City, UT). The curriculum was developed by 3 faculty at our institution who have mutual interest and expertise in PR, as well as broad experience in publishing and journal editing. The course was introduced in 2017 and consists of 5 modules, each related to a distinct PR topic (Table 1) and with a general focus on biomedical journals. An invitational flyer was sent by email to members of the Department of Medical Education; medical, pharmacy, and nursing staff; program directors; and department chairs 1 month before the start date. No prior experience or expertise is required to enroll in the course. Participants are allotted 2 weeks to complete each module, which consists of a brief video recorded by one of the faculty, reading materials, a quiz, an online discussion board, and assignments. During each 2-week module, the responsible faculty author monitors asynchronous group conversations, facilitates discussion, gives feedback on the assignments, and records grades.

Participants complete an end-of-course survey that includes narrative inquiries related to the course content and intent to apply the learned knowledge and skills in the future. These data are used to inform program improvement. Continuing Medical Education (CME) credits are awarded, and surveys are distributed to all participants who achieve an 80% or higher composite score for the course.

The second part of our educational effort, GMPR meetings, was also initiated in 2017. The monthly meetings are conducted by 1 or 2 mentors of the PR course; often, all 3 attend. GMPR was intentionally designed as an interprofessional gathering of individuals with any level of training, any amount of PR experience, and a shared interest in scholarly publication and research. Each month, invitations are extended by email to physicians; nursing, pharmacy, clinical ethics, and social work staff; medical students; residents; program directors; department chairs; and research professionals. Participants in the PR course are encouraged

to attend. Manuscripts solicited for discussion at the monthly meeting are either a new internal manuscript being prepared for submission for publication, or an external manuscript for which a journal has requested a formal PR and given permission for its discussion in this forum.

One week before GMPR meetings, manuscripts for discussion are distributed electronically. Each article is accompanied by a Manuscript Backgrounder, which provides guidance to participants and is completed by the primary presenter (internal author or journal reviewer). For internal manuscripts, the Backgrounder includes 1) the stage of the manuscript in the publication process (e.g., an early draft, a manuscript ready for submission, a rejected manuscript), 2) the journal(s) being considered for submission, and 3) a checklist indicating what specific feedback the authors seek (e.g., structure, flow, quality of conclusions, use of background literature, describing significance or method). For external manuscripts, the Backgrounder includes 1) the name of the journal requesting the review, 2) the journal's requirements for the publication category sought, and 3) a confidentiality reminder. Attendance is either in-person or by telephone, and CME credit is offered. For external manuscripts, permission to review the manuscript in a group setting is obtained from the journal, and attendee names and titles are recorded. Input is solicited from the group for final recommendation to the journal editor (e.g., acceptance with major revisions). For both types of manuscript, the work is evaluated and discussed by section, and attention is given to overall characteristics, such as readability, innovation, and place in the literature.

RESULTS

In the first 2 years, participation in the "Best Practices in Peer Review" online course was interprofessional, with representation from medicine, pharmacy, nursing, and research. There were 13 participants total in 2017 & 2018; all participants were based at our institution. The course is currently in its third year (October 7, 2019-December 13, 2019), and 19 participants have enrolled. Of these, 9 are from outside of the institution, 1 of whom is an international participant.

A total of 5 participants (38%) completed the course in the first year and 8 (42%) in the second year [medicine (9), pharmacy (1), nursing (2), and research (1)]. Completion rates for the end-of-course

survey were 4/5 (80%) in 2017 and 7/8 (88%) in 2018. All respondents reported an increase in their knowledge and skills related to PR. Some noted that the information in the course would help them improve the quality of their own manuscripts. Eight of the course graduates (62%) have since served as peer reviewers for our institutional journal. Based on participants' feedback, we expanded the time allotted for each module from 1 to 2 weeks and simplified selected module assignments (e.g., focusing on one section rather than the full manuscript).

GMPR was first held in January 2017 and conducted monthly for the initial 10 sessions. In 2018 and 2019, we held 8 sessions per year for a total of 26 sessions. Attendance data were available for 13 sessions. An average of 8 participants attended the sessions (ranging from 4 to 10), representing the disciplines of medicine, nursing, ethics, research, library science, information technology, medical education, and curriculum design.

Internal and external manuscripts were equally represented at GMPR. Of the 26 reviewed manuscripts, 13 (50%) were internal manuscripts being prepared for submission for publication and 13 (50%) were formal reviews requested by an outside journal. Most manuscript topics for both internal (n = 10) and external (n = 10) reviews were related to medical education (77%), and 3 (11%) were devoted specifically to interprofessional education. The remaining manuscripts addressed quality improvement (8%) and medical ethics (4%).

DISCUSSION

In 2017, we started a 2-part educational effort at our institution to build a community of peer reviewers and address a shortage of training opportunities for future reviewers.

The goal of the "Best Practices in Peer Review" online course is to increase participants' understanding of PR, their use of research publication guidelines, and their engagement as a journal reviewer. We review the modules annually and incorporate participant feedback when feasible. The course has gained increasing enrollment during its first 3 years. Most recently, enrollment extended beyond the institution and even internationally. Over half of past participants are now engaged as peer reviewers for our institutional journal.

Considerations for future directions include investigating differences in program assessments completed by participants with varying levels of PR experience and areas of expertise, and to include professionals outside of the medical community.

To date, the GMPR sessions at our institution have had consistent, interprofessional attendance, providing a spectrum of viewpoints and levels of experience. The topics have been primarily related to medical education due to the backgrounds of the session leaders. However, requests to review any type of manuscript are welcome and could be supported by the expertise of those who typically attend. Our approach to GMPR differs from that reported by others, such as Nagler et al,⁸ who conduct their reviews as a group by conference

Table 1. Best Practices in Manuscript Peer Review Course

Modules	Learning Objectives
1. The Role of Peer Review	Explain the role of peer reviews in biomedical journals.
2. Best Practices for Peer Review	Describe best practices for peer reviewing manuscripts.
3. Different Approaches for Peer Review	Apply available Health Research Reporting Guidelines (i.e., EQUATOR network) in the critique of manuscript examples.
4. Challenges in Peer Review	Discuss the current challenges in peer reviewing.
5. Putting it All Together	Recognize the benefits of peer reviewing (e.g., academic recognition and advancement; advancing patient care with new knowledge; intellectual curiosity and professional satisfaction).

call, assign specific sections for review, require a commitment to accept or reject the manuscript before the session, and review for only one journal. Participants reported many benefits, including expanded individual expertise, increased confidence and skills in peer reviewing, significant enjoyment and satisfaction, and the development of professional networks for future collaboration.⁷ These findings are consistent with the goals of our institutional PR program and provide a rubric for its further evaluation.

Limitations of this project include starting at a single institution and a lack of a formal evaluation process for the GMPR sessions. We are developing plans for more robust program evaluation and anticipate future expansion in both course enrollment and frequency.

CONCLUSIONS

Formal PR is the mainstay of scholarly publication. However, educational opportunities are needed to meet the demand for trained peer reviewers. A program that combines an online training course and GMPR provides a viable mechanism to support and build a scholarly community of peer reviewers.

Conflicts of Interest: None

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